

Application No.: Not yet assigned

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Amendments to the Claims:

Please cancel claims 7 and 12 without prejudice.

Please amend claims 1, 2, 4, 8-11, 13-18, 20, 21, 23 and 24 as set forth below.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A water-tolerant, regenerable adsorbent for use in an acid gas dry scrubbing process, said adsorbent comprising ~~surface or framework~~ an amine-functionalised mesoporous silica or organosilica ~~surface or framework~~, wherein amino groups are readily accessible within the pore channels or pore walls of the mesoporous silica or organosilica surface or framework.
2. (Currently Amended) The adsorbent of claim 1, wherein the amine-functionalised mesoporous silica or organosilica surface or framework comprises amine-containing molecules that are covalently bound to the surface of the pore channels or pore walls.
3. (Original) The adsorbent of claim 2, wherein the amine-containing molecules are amine-containing trialkoxysilane or trichlorsilane.
4. (Currently Amended) The adsorbent of claim 1, wherein the pore channels or pore walls ~~of the amine-functionalised mesoporous silica or organosilica~~ has have a hydrophobic surface ~~and with~~ with amine-containing molecules ~~are being~~ dispersed within the hydrophobic surface.

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5. (Original) The adsorbent of claim 4, wherein the amine-containing molecules are alkylamines, arylamines or alkylarylamines.
6. (Original) The adsorbent of claim 5, wherein the alkylamines are selected from the group consisting of monoethanolamine (MEA), diethanolamine (DEA), diisopropylamine (DIP), N-methyldiethanolamine (MDEA), 2-amino-2-methyl-1-propanol (AMP), polyethylenimine, β,β' -hydroxyaminoethylether and combinations thereof.
7. (Canceled)
8. (Currently Amended) The adsorbent according to ~~any one of~~ claim[[s]] 1 —7, wherein the acid gas is carbon dioxide.
9. (Currently Amended) A method of dry scrubbing comprising the step of contacting a gaseous stream containing an acid gas ~~to be removed~~ with a water-tolerant, regenerable adsorbent comprising ~~surface or framework~~ an amine-functionalised mesoporous silica or organosilica surface or framework, wherein amino groups are readily accessible within ~~the~~ pore channels or pore walls of the mesoporous silica or organosilica surface or framework.
10. (Currently Amended) The method according to claim 9, wherein the amine-functionalised mesoporous silica or organosilica surface or framework comprises amine-containing molecules that are covalently bound to the surface of the pore channels or pore walls.
11. (Currently Amended) The method according to claim 9, wherein the pore channels or pore walls of ~~the amine-functionalised mesoporous silica or organosilica~~ has have a

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hydrophobic surface ~~and~~ with amine-containing molecules ~~are being~~ dispersed within the hydrophobic surface.

12. (Canceled)
13. (Currently Amended) A process for preparing an adsorbent according to claim 2 ~~or~~ 3, comprising[[:]]
- (a) ~~providing a mesoporous silica or organosilica;~~ and
 - (b) ~~grafting an amine-containing silane to the a surface of the a mesoporous silica or organosilica to produce the an amine-functionalised mesoporous silica or organosilica~~ surface or framework.
14. (Currently Amended) A process for preparing an adsorbent according to claim 2 ~~or~~ 3, comprising:
- (a) mixing a source of silica or organosilica, an amine-containing silane and an amphiphile molecule under conditions that facilitate self assembly to produce ~~the an~~ an amine-functionalised mesoporous silica or organosilica surface or framework.
15. (Currently Amended) A process for preparing an adsorbent according to claim 2 ~~or~~ 3, comprising:
- (a) ~~providing a mesoporous silica or organosilica;~~
 - ([[b]])a) grafting ~~an a~~ a reactive group-containing silane to the a surface of the a mesoporous silica or organosilica to form a reactive group-containing mesoporous silica or organosilica; and
 - ([[c]])b) treating the reactive group-containing mesoporous silica or organosilica with an amine to produce ~~the an~~ an amine-functionalised

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mesoporous silica or organosilica surface or framework.

16. (Currently Amended) A process for preparing an adsorbent according to claim 2 ~~or 3~~, comprising:
- (a) mixing a source of silica or organosilica, a reactive group-containing silane and an amphiphile molecule to produce ~~the~~ a reactive group-containing mesoporous silica or organosilica; and
 - (b) treating the reactive group-containing mesoporous silica or organosilica with an amine to produce ~~the~~ an amine-functionalised mesoporous silica or organosilica surface or framework.
17. (Currently Amended) A process for preparing an adsorbent according to ~~any one of~~ claims 4, ~~5 or 6~~, comprising:
- (a) preparing contacting a mesoporous silica or organosilica ~~in the presence of~~ with a swelling agent and subsequently selectively extracting the swelling agent to produce a hydrophobic layer on the surface of the mesoporous silica or organosilica; and
 - (b) treating the mesoporous silica or organosilica produced in step (a) with an amine to produce ~~the~~ an amine-functionalised mesoporous silica or organosilica surface or framework.
18. (Currently Amended) A process for preparing an adsorbent according to claim 1, comprising:
- (a) mixing a silica source with an amphiphilic molecule having at least one amino group under conditions that facilitate self assembly of the silica source and the amphiphile to produce ~~the~~ an amine-functionalised mesoporous silica or organosilica,

wherein, the amine-functionalised mesoporous silica or organosilica is a mesoporous silica or organosilica having pores filled with amine-containing amphiphilic molecules.

19. (Original) A process for preparing an adsorbent according to claim 1, comprising:
 - (a) reacting a silica source with an amphiphilic molecule; and
 - (b) simultaneously or subsequently adding an amine-containing swelling agent.
20. (Currently Amended) A process for preparing an adsorbent according to claim 7, comprising:
 - (a) mixing a reactive group-containing silica source with an amphiphilic molecule to produce a mesoporous silica or organosilica having a framework comprising reactive sites; and
 - (b) introducing amino groups at the reactive sites to produce the an amine-functionalised mesoporous silica or organosilica surface or framework.
21. (Currently Amended) A system for removal of an acid gas from a gaseous stream, comprising:
 - (a) two or more sorbent beds comprising the adsorbent of claim 1;
 - (b) a valve means for controlling gas flow through the sorbent beds; and[[]]
 - (c) a pump means for controlling gas pressure in the system.
22. (Original) The system according to claim 21, wherein the acid gas is carbon dioxide.
23. (Currently Amended) The system according to claim 21 ~~or 22~~, wherein the adsorbent is pelletized with a binder that is an inert secondary material.

In re Application of
ABDELHAMID SAYARI

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24. (Currently Amended) The system according to claim 21 ~~or~~ 22, wherein the adsorbent is pelletized with a binder that is an active secondary material.